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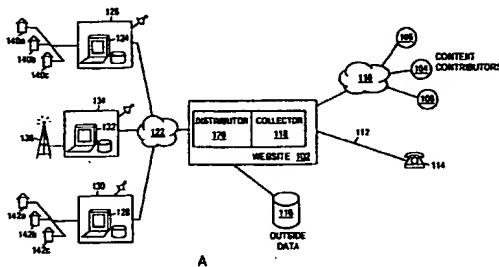
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[Continued on next page]

(54) Title: DISTRIBUTING ADVERTISEMENT OVER A NETWORK



(57) Abstract: Content for distribution over a television system is collected from widely distributed contributors (104) at a central location (118, 120) using a data communications network such as the Internet. Based on this collected content, data is generated which is suitable for transmission over a relatively low-bandwidth network connection. This generated data is then transmitted to a video workstation (124) at either a cable TV head-end (126) or at a TV broadcast station where it is stored. At the video workstation, the data is converted into video formatted broadcast data and delivered to subscriber households (140A-140C). The broadcasted data can include multiple display areas which have independently controlled and scheduled data.

Advertisement Order Form

|  |                     |               |
|--|---------------------|---------------|
| CITY _____   | ACRE _____          | ATTACH 154    |
| PRICE _____  | PICTURE _____       |               |
| SQ FT _____  | AGENT ID _____      | 152           |
| BATH _____   | PROPERTY ID _____   |               |
| BED _____  | DATE _____          | SPECIAL _____ |
| CAR _____  | STARTING DATE _____ |               |
| <input type="button" value="CLEAR"/> <input type="button" value="SUBMIT"/> |                     |               |

B

TABLE ENTRY

|              |              |     |
|--------------|--------------|-----|
| AD ID :      | WST28        | 175 |
| PHOTO ID :   | BROTHS       |     |
| AGENT ID :   | BROTHS       | 177 |
| START DATE : | 18 JULY 2000 |     |
| LOCATION :   | WAYNE        | 177 |
| BED :        | 4            |     |
| BATH :       | 3            | 177 |
| ...          | ...          |     |

C

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## DISTRIBUTING ADVERTISEMENT OVER A NETWORK

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Field of the Invention

The present invention relates to distributing multimedia content and more particularly to the automatic production of a multimedia work, such as a television broadcast, by gathering and distributing the content over a network, such as the Internet.

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## CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority to Provisional Application Serial No. 60/138,776, filed June 14, 1999, in the name of Denis Dolgachev and entitled INTERNET BASED TV PRODUCTION.

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## REFERENCE TO MICROFICHE APPENDIX

A microfiche appendix of source code, database field definitions and UML diagrams are included with the present specification and consist of eight microfiche having 458 frames.

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## BACKGROUND OF THE INVENTION:

Broadcast and Cable TV have traditionally offered a way for advertisers and other content providers to reach widely distributed audiences with audio and video programs. Typically, programming content is generated from a central location and homogeneously distributed as video broadcast data by satellite to geographically distinct program insertion points, such as television broadcast facilities or a head-end for a cable TV facility. At program insertion points, a program is extracted from a satellite channel, optionally recorded for later

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transmission, and either broadcast by a TV station or combined with other programs and applied to a cable television head end for distribution to cable subscribers. The traditional satellite distribution methods, however, are expensive, require specialized equipment, and do not allow flexible, independently targeted transmissions to various destinations.

The Internet provides the possibility for centrally gathering programming content from distributed contributors and inexpensively sending programming content selectively to different locations but suffers from comparatively limited bandwidth in relation to satellite distribution. In particular, the relatively low data transfer speeds over the Internet render it impractical for directly receiving and collecting video content and directly broadcasting high-quality digital video to TV programming insertion points as a method for distributing programming content.

A need, therefore, exists for methods, systems and software to inexpensively and selectively deliver localized programming content to TV facilities across the country and the world. Similarly, a need exists for centralized collecting of programming content and orders for programming content from widely distributed contributors.

#### SUMMARY OF THE INVENTION

The present invention addresses these and other needs by providing for a system and software which uses a data communications network, such as the Internet, to gather, address and deliver low-bandwidth content elements to TV program insertion points, such as a cable TV head-end, and then assembles these content elements at the insertion point into video data for broadcasting. This also permits the assembly of programming customized for a particular local area.

A central computer-based system gathers and stores the low-bandwidth content elements that will eventually be delivered to each insertion point. Scheduling information is associated with the content elements so that the content elements can be properly arranged to form a "show" when broadcast. The content elements and their associated scheduling information are selectively transmitted

over the communications network to only those insertion points which service a desired geographical area. At each such insertion point a video workstation receives the transmitted data and assembles the content elements according to the scheduling information into video broadcast data. In this way the network is used  
5 to deliver low-bandwidth data to select insertion points where the data is converted into high-bandwidth, broadcast video data which is transmitted over a TV channel.

Accordingly, one aspect of the present invention relates to a system, method and software for distributing content over a data communications  
10 network, such as the Internet, to a TV program insertion point, such as a cable TV head-end, which first receives content over the network, transmits the content to the insertion point also using the network and then, at the insertion point, assembles the content into a video broadcast.

Another aspect of the present invention relates to a method, system and  
15 software for selling advertisements for broadcast over TV wherein an order is received for an advertisement, data corresponding to that order is identified and that data is transmitted over a data communications network, such as the Internet, to a TV program insertion point, such as a cable TV head-end,. As an illustrative example, real-estate advertisements can be ordered and MLS data received to  
20 facilitate generating the ads.

A further aspect of the present invention relates to a method and software  
for generating, from primitive graphic elements, video broadcast data at a TV  
program insertion point. A number of primitive graphic elements may be  
received along with associated scheduling information. The elements are then  
25 arranged according to the schedule and a computer graphics display of the  
sequence is generated which is converted into video data.

In another aspect of the present invention as may be applied to the real-estate example, property listing data can be received, a determination made as to whether a photograph is needed, a work-order can be generated and is transmitted

over a data communications network to photographers, and a digital photograph is received in response to the work-order.

A further aspect of the present invention relates to a method and software for simultaneously displaying multiple ports of different content in a single display window. This method and software stores primitive graphic elements and scheduling information for each display port being controlled and generates an ordered sequence of the primitive graphic elements associated with each port according to their corresponding scheduling information. These ordered sequences are then combined into a parallel, synchronized sequence which is used to generate a multi-port display.

Additional advantages of the present invention will become readily apparent to those skilled in this art from the following detailed description, wherein only the preferred embodiment of the invention is shown and described, simply by way of illustration of the best mode contemplated of carrying out the invention. As will be realized, the invention is capable of other and different embodiments, and its several details are capable of modifications in various obvious respects, all without departing from the invention. Accordingly, the drawings and description are to be regarded as illustrative in nature, and not as restrictive.

## BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings and in which like reference numerals refer to similar elements, and in which:

FIG. 1A illustrates an exemplary architecture for collecting and distributing TV content over a network.

FIG. 1B illustrates an exemplary data entry screen for prompting a remote contributor to provide data.

FIG. 1C illustrates an exemplary database for data provided by a remote contributor.

FIG. 2A illustrates an exemplary display screen according to certain embodiments of the present invention with multiple display ports.

5        FIG. 2B illustrates a flowchart for generating a broadcast show with a display screen having multiple display ports.

FIG. 3A illustrates an exemplary architecture for selling TV advertising over a network.

10        FIG. 3B illustrates a flowchart for creating a custom broadcast show according to certain embodiments of the present invention.

FIG. 4. illustrates a flowchart for selling TV advertising according to the architecture of FIG. 3A.

FIG. 5 illustrates a screen for creating scheduling information according to certain embodiments of the present invention.

15        FIG. 6 illustrates a frame capture of an exemplary real-estate advertisement generated using various aspects of the invention

FIG. 7 illustrates one example distributed architecture for selling TV advertisements.

20        FIG. 8 illustrates a flowchart for assigning and acquiring digital photographs.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

25        A microfiche appendix has been appended to this description to provide the source code, database definitions and modeling diagrams for implementing certain embodiments of the present invention described herein. The following figures and description, however, provide a more narrative explanation of the present invention to aid with the understanding and appreciation of the fullest aspects of this invention.

Referring to FIG. 1A, a central web-site 102 is depicted that includes a data collector 118 that manages the collection of broadcast content from remote

contributors 104-108 who communicate with the web site 102 through a data communications network 110. The communications network of FIG. 1A and subsequent figures can include the Internet, leased or dedicated networks, or some mixture of public and private network links. However, to aid with the clarity of the following description and explanation of the present invention, the communications network will often be referred to simply as the Internet. The collected content can include clip art, digitized company logos or other pictures, text files, HTML form responses, or other types of data. The remote contributors 104-108 may also use the network 110 to request the web-site to locally assemble, collect and/or generate data to augment the content which the contributors 104-108 provide.

One exemplary application of the present invention is for advertising real-estate. FIG. 1B depicts an example input form 150 that could be presented to a remote contributor 104 for submitting an order for a real-estate advertisement. The different fields can be automatically filled based on predetermined data or could be filled according to input from the remote contributor 104. For example, by providing a property ID number 152, available information related to the other fields can be extracted from a database of MLS listing information and used to fill the fields. An option 154 for attaching a digital photograph, for example, is also included that allows a remote contributor 104 to upload information to the web-site 102. After completing the form 150, the contributor 104 then submits the advertisement order to the web-site 102. At the web-site 102, the order form 150 as well as other order forms result in related data being stored in a database. An exemplary database table entry 170 is depicted in FIG. 1C. Some of the data is stored directly in the table while, for other data, only references or links to that data are stored. In the example table entry, a field 175 stores an agent's ID number. When creating an advertisement, this number can then be used as an index to extract the data from another table which actually stores an agent's name and contact information. Another field 177 directly stores data such as the



number of bathrooms in the property to be advertised. An extensively detailed set of database definitions utilizing Lotus Notes to manage data received from remote contributors is provided in the attached microfiche appendix; utilizing Lotus Notes facilitates the storing and associating of disparate data formats such as text,  
5 animation, image, and audio data.

In addition to collecting data from the contributors 104-108, the web-site 102 also communicates with other contributors 114 over more traditional media 112 such as by telephone or facsimile. These other contributors 114 can provide some form of specification and request that the web-site 102 generate broadcast  
10 content according to the specification. To meet such a request, the web-site 102 relies on internally stored data and applications as well as externally stored data, such as the database 116.

The web-site 102 can, thus, collect or generate broadcast content for widely distributed contributors. Part of the information included in the broadcast  
15 content is a geographical destination, for example a cable TV head-end or other TV program insertion point, to which that content will eventually be transmitted.

The broadcast content which is transmitted to the insertion point, is not a high-bandwidth video feed but, rather, consists of primitive graphic elements which can be easily transmitted over low bandwidth links. Some examples of  
20 such elements include static graphic slides (with some type of animated transition between slides, such as wipes or fades; these animated transitions would normally be generated at the insertion point rather than transmitted to further reduce bandwidth requirements), horizontally scrolling text, vertically scrolling text, animated graphics (e.g., AVI), and live motion video clips (e.g. MPEG-2). A  
25 number of primitive graphic elements in an ordered sequence comprises a program. Each program has a duration specified by a schedule and each primitive graphic element is displayed within a program for a specified, allotted time. A collection of programs that form a programming time block, such as one day's worth of programming, forms a schedule. This scheduling information and the

associated primitive graphic elements are the data transmitted to a TV insertion point which are assembled to generate a show.

Initially, the web-site 102 preferably stores and organizes the broadcast content based on the content's destination. This data organization can be accomplished either physically, logically, or a combination of both. For example, one large database might store all broadcast content with each entry having a field to specify a destination. Alternatively, a separate, physical database might exist for each possible destination. These separate databases can be centrally co-located with the web-site 102 or geographically distributed and simply managed as a single, logical database. Thus, within the web-site, data which is destined for one TV insertion point is segregated, logically or physically, from data for other insertion points. Some broadcast content may be destined for more than one insertion point. A copy of this type of content could be stored separately for each such insertion point, resulting in multiple copies being stored, or only one copy could be stored with that copy being appropriately labeled for each of its multiple destinations.

Once the broadcast content is collected, generated, and organized, a content distributor 120 is responsible to ensure that the content is distributed to the appropriate destination for insertion into a local TV channel. By way of example, the content destined for a particular cable TV head-end 126 is distributed over a network connection 122 to a workstation 124 at the head-end 126. The preferable arrangement is for the workstation 124 to have a permanent (or static) network address, for the Internet this would mean a static IP address, so that the content distributor 120 does not have to repeatedly determine the destination's address before transmitting content. Similarly, broadcast content for the other destinations 130 and 134 is distributed, by the content distributor 120, over the network connection 122 but using the appropriate destination address for the other workstations 128 and 132.

In this way, broadcast content can be collected and managed centrally but selectively distributed to create localized content at each particular TV program insertion point.

Network connections, or clouds, 122 and 110 are illustrated as distinct  
5 features in FIG. 1A. This depiction is merely to simplify illustrating one arrangement of the present invention and does not necessarily reflect the actual physical structure of that arrangement. In particular, the web-site 102 may have one, two or even more physical interfaces to the network. Modern network operating systems allow these interfaces to have distinct network addresses as  
10 well as to logically share a single address. The figure illustrates that the web-site 102 communicates with remote contributors 104-108 as well as the cable TV head-ends 126 and 130 and broadcast TV facility 134 over a network, such as the Internet, in any of the wide variety of configurations that are possible.

As indicated above, included with the broadcast content that is distributed  
15 to a TV insertion point is scheduling information for that broadcast content. Because the broadcast content is eventually used to generate a video broadcast, there is some type of sequential arrangement associated with the broadcast content. This information relating to the sequential arrangement is found in the scheduling information transmitted along with the broadcast content. At the web-  
20 site, a scheduler application is responsible for creating a schedule that specifies which primitive graphic elements are in which program, which programs form a schedule, and at what time the programs will be displayed within that schedule.

The scheduling associated with each primitive graphic element is extremely flexible. One example is for a specific duration to be specified for each  
25 distinct element. In this case, if the aggregate time for the elements is less than the time scheduled for a program, then the elements can be looped to fill in empty time; or if the aggregate time is greater than the scheduled time then the "last" element to be displayed is logged and the show resumes with this "last" element the next time that program is scheduled. Alternatively, each primitive graphic

element in a program can be scheduled equal display time. This equal display time can be a predetermined duration or calculated based on some relation between the number of elements and the scheduled program duration.

One method of transmitting the primitive graphic elements and the scheduling information to a TV program insertion point would be to develop a specialized messaging protocol which collects relevant information into messages and sequentially transmits the messages to a destination where they are separated back into primitive graphic elements and appropriately stored or used to generate a show in near real-time. If a show is to be generated in the near real-time, the transmission protocol can include some type of flow control or data buffering to aid with a smooth display of the show.

Another method, however, of distributing the broadcast content is to take advantage of the replication functionality within modern databases. A database manager manages a "parent" database and also the existence of remotely located "children" databases. These "children" databases can be mirrors of the entire "parent" database or just a subset. The database manager tracks changes to the data in the "parent" database which affects the mirrored databases and then periodically transmits updated data to the "children" databases in order to synchronize the databases.

By storing primitive graphic elements as well as scheduling information as elements in a database, distributing them from a parent database at the web-site 102 to a child database at the workstation 124 can be accomplished using database replication rather than a specialized messaging format and protocol.

At the head-end 126, the video workstation 124 receives and stores the broadcast content and scheduling information. A software application running on the workstation 124 transforms the broadcast content into a video broadcast which displays the appropriate primitive graphic elements at their scheduled time. In this example, the workstation 124 is connected to the cable TV distribution

medium so that the video broadcast can be inserted onto a cable TV channel and delivered to subscriber households 140a-c.

This application stored and operating at the workstation 124 at the head-end 126, or other TV program insertion points 130 and 134, which produces the video broadcast, generates the show on-the-fly from the primitive graphic elements. In other words, the elements are stored separately at the workstation 124 in their native formats; they are not yet combined into sequences or groups. The scheduling information is stepped through in real-time, or near real-time, to repeatedly identify a "next" primitive graphic element; at the appropriate time, that element is then retrieved and displayed for the scheduled duration.

The particular type of primitive graphic element which is retrieved (e.g. horizontally scrolling text, graphic slide, etc.) determines which of a plurality of sub-modules is called in order to properly display that particular type of element. This modular design allows the easy addition of new elements without redesigning the entire software application. For example, to add the capability to "display" (play) an audio file, all that needs to be added is a sub-module that handles audio data. Accordingly, the scheduling, receiving, retrieving, and other components of the application remain the same and need not be upgraded to add a new type of element.

Once a primitive graphic element is displayed for the appropriate duration, the next element is retrieved and displayed; this cycle repeats itself until the program is completed. After a program is completed, the next program in the schedule starts and its elements are cycled through.

Because the video broadcast is generated on-the-fly, updates and changes to a broadcast program can be quickly and efficiently accomplished. A remote contributor 104 may want to update some aspect of the broadcast content that was originally provided. To do so, the remote contributor 104 either provides the updated content or requests local collection, assembly and/or generation of

updated content. Once revised, the updated primitive graphic elements are all that need to be transmitted to the head-end 126 for storage at the work station 124.

If that contributor 104 had originally provided three slides and only one is revised, then there is no need to re-transmit all three slides, just the updated one.

5 Similarly, there is no requirement to re-transmit an entire program when only one element changes. In the prior art methods, where the video broadcast of a program was generated at a central location before being distributed, a minor change to a single portion of the program required re-distribution of the entire program. As previously discussed, the broadcast content may rely on outside  
10 databases 116. When this underlying data changes, the broadcast programs may change even if not initiated by the original contributor. The content collector 118 tracks the relation between the underlying data and the broadcast content which relies on it. The primitive graphic elements which may, for example, provide a ticker-tape of loan products with certain percentage rates, will need to be updated  
15 when the percentage rates change. Accordingly, when interest rates are provided by a database or real time service, new broadcast content may sometimes be incorporated and transmitted to the TV insertion points even without the remote contributor 104 explicitly revising the originally provided content.

The changed primitive graphic elements are sent to the head-end 126,  
20 where they replace the original content elements already stored at the workstation 124. The next time the broadcast program that includes the changed elements is generated (according to the schedule), the updated, rather than the original, elements are used to create the video broadcast. Therefore, updates to video broadcast material can be accomplished quickly and efficiently and not  
25 overburden the low-bandwidth link 122 between the web-site 102 and the head-end 126.

Similar to transmitting the initial broadcast content, this updated broadcast content can be transmitted to the TV insertion points in a variety of ways. As previously mentioned, modern database management software includes

replication capability that periodically and automatically synchronizes distributed copies of a database. Such replication is typically performed as a background process which does not interfere with foreground processes, such as generating a video broadcast. An implementation using Lotus Notes is shown in detail in the microfiche appendix. Another alternative would be to send updates to, for example, a head-end 126 immediately after an update occurs or at a predetermined scheduled time or utilizing a specialized messaging protocol. Regardless of the particular update method used, revisions to broadcast content are efficiently transmitted to the head-end 126 so that the local broadcast to a subscriber household 140a-c reflects the updated material almost immediately.

In one embodiment, the workstation 124 converts the broadcast content into video data properly formatted for insertion onto a cable TV channel. In this particular embodiment, the workstation 124 cycles through the primitive graphic elements, as described previously, according to the schedule. In doing so, the workstation 124 generates standard VGA graphics card output which is converted, by a video converter to an NTSC video broadcast signal. Other computer graphics standards as well as a variety of video broadcast formats can also be generated to address other embodiments. Workstation 124 may alternatively include a video board which directly provides video formatted signals from the sequence of primitive graphic elements.

For managing and maintaining the generation, transmission and broadcasting of broadcast content from the web-site 102 and head-end 126, a logging functionality is included in the previously described software applications. For example, at the workstation 124, the frequency and duration of the display of particular content elements, programs and schedules can be logged for later analysis or billing purposes. Similarly, errors and other problems can be logged for maintenance and troubleshooting purposes. At the web-site 102, logging of content contributions or requests for local generation of content can be tracked as well as the occurrence of content updates, and information regarding

the transmission of content to the insertion points 126, 130 and 134. Transfer of data between the two sides as well as access to this logged data can be appropriately controlled to permit operators of the web-site 102 and remote contributors 104 to monitor their interaction with the system.

5           A remote contributor 104 may also easily review how the broadcast content that was provided will actually be broadcast. A scaled down version of the application on the workstation 124 which steps through the primitive graphic elements can be downloaded to a computer that is local to the contributor 104. This scaled down version can be a stand-alone application or, for example, a Java  
10   applet temporarily downloaded over the network 110, which may not require all the scheduling and other features of the application running on the workstation 124. The remote contributor 104 is able to access the web-site 102, using the network 110, and request to review their own content. In response, the web-site 102 sends the primitive graphic elements to the remote contributor 104 who views  
15   the content as it will be broadcast.

          In the above discussion, only a single stream of primitive graphic elements is described as being used to generate a video broadcast. However, because of the modular design of the application which generates the video broadcast, different, independent streams of primitive graphic elements can also be simultaneously  
20   displayed.

          FIG. 2A depicts an exemplary screen 202 with several display ports 204 - 210 for concurrently displaying different streams of broadcast content. Each of these ports 204-210 has an associated program schedule which specifies selected primitive graphic elements to display. Therefore, the broadcast content for port A  
25   204 may be scheduled independently of the broadcast content for display in port B 206. The video generating application determines, in parallel, the primitive graphic elements to display in each port according to the schedule associated with each particular port. For example, an animated graphic might be displayed in port A 204 while two or three different primitive graphic elements of shorter duration



cycle through port B 206. With this design, updates to the port A content stream can be transmitted from the web-site 102 to the insertion point 126 without the need for the port B 206 content stream to also be transmitted. In addition, a program which is scheduled for port A 204 at one time during the day may be  
5 scheduled for a different port at some other time or day. The actual conversion of the computer generated graphics data remains the same as previously discussed and provides "channels within channels" to maximize the information broadcast over the TV channel.

The video generating application provides flexibility with regard to the  
10 number of display ports, the size of the display ports, and how ports are allocated to different content streams. In one embodiment, various ports have border styles, background colors, foreground colors, port sizes, port locations and screen coordinates which are configurable independently of the content streams being displayed. Accordingly, different versions of primitive graphic elements are not  
15 needed for all the possible display port variations.

Part of the video generating application at the workstation specifies the port geometries and other options independently of the programs scheduled for display. The programs, which are generated on-the-fly are generated according to those port options which are currently specified. The next time that same  
20 program is generated, the same graphic elements can be used even if the specified display port options have changed. Various configurations of display ports, therefore, can be scheduled throughout the day such that at some times different numbers of ports are available than at other times or that one port may be more prominently displayed at one time than at another. However, a remote contributor  
25 or local content generator still only has to provide a single set of primitive graphic elements.

As an alternative to the above example, not all ports are required to be independently controlled. A content stream can span, or straddle, two ports which have been linked together and are controlled by a single schedule. The modular

design of the video generating application stored at, for example, the workstation 124 provides great flexibility with respect to how programs are displayed on the workstation 124.

The flowchart of FIG. 2B illustrates an exemplary general method for assembling the various primitive graphic elements into different display ports to form a show.

After scheduling information and the associated graphic elements are received at the TV insertion point, this data is stored in a local database in step 252. For each show, the sizes, locations, borders and other characteristics of the display ports (collectively referred to as the port geometry) are determined in step 254. A predetermined display port geometry can be specified for all shows so that some regularity and familiarity is provided to a viewer or the port geometry can be differently configured for each show. In step 256, the schedule for each display port is identified. A separate schedule for each port is one way of controlling the content displayed in the port; however, one schedule with data corresponding to each display port is another way. In this second method, the schedule may be a database which consists of entries corresponding to a particular time and each such entry having a field for each display port. Within each of these fields, a primitive graphic element is identified for display. In this way, a schedule logically consists of multiple, independent schedules each corresponding to one of the display ports. Once a clock or timer value is initiated or accessed, in step 258, the show has a reference by which to play.

The application at the workstation 124 that generates the show, steps through the schedule to display the appropriate primitive graphic elements in each display port. At the current clock value, in step 260, the primitive graphic elements listed in the associated schedule entry for each display port are identified. In step 262, computer graphics data is generated by retrieving the identified elements from the locally stored database and displaying the elements according to the constraints of the port geometry such that all the scheduled

elements are combined to form a single display screen incorporating the different display ports. In a separate step (not shown) the generated computer graphics data is converted to video formatted data for broadcasting over a TV channel.

If the show has not reached its end, then the next display data must be generated. To continue the show, the clock value is incremented, in step 264, and control returns to step 260 to identify the primitive graphic elements for the new clock value. Clearly, if the elements identified in step 260 are the same as the elements identified in the previous iteration of step 260, then the computer graphic display can remain unchanged in step 262 before proceeding on to step 264.

One exemplary application which can benefit from selective distribution of localized TV content using a data communications network is that of selling advertisements. Example types of advertisements include, but are not limited to, cars, antiques, auction items, etc. Other types of TV programming, distributed by cable TV or broadcast TV, such as public access, governmental, informational, entertainment, news, and educational programming, are also specific applications which can benefit from the present invention. Similarly, in addition to cable and broadcast TV, geographically distributed kiosks and closed-circuit channels such as those found in hotels, hospitals, and libraries could be used to distribute localized content according to certain embodiments of the present invention. However, in the following discussion, examples involving selling advertising for cable TV will be used for consistency and clarity; and in particular, examples involving selling real-estate advertisements will be used even though, as previously stated, ads for vehicles, automotive and other products could be sold using similar methods and systems. Rather than always providing the broadest theoretical description of the present invention, numerous specific examples are provided in both the general and detailed description of this particular application in order to facilitate an understanding of the present invention; however, these specific examples are not intended to limit its scope.

FIG. 3A depicts an exemplary embodiment of a system that is useful for selling cable TV advertisements using a data communications network. Specifically, the Internet 302-310 as well as other data communications networks can be used in this exemplary system to collect orders for advertisements from real estate agents and brokers 320, to collect data from photographers 330 and 332 and other data sources 324-328, and also to distribute the ads to a TV program insertion point such as a cable TV head-end 334 and a TV broadcast facility 346. Agents 320 and businesses 322 who want to purchase advertisements can, via the Internet 308, access the web-site 312 to order, revise, manage and pay for the ads. Property listing data, from an MLS database for example, is available to the agents 320 through the web-site 312. A real estate agent 320 can choose from a list of properties he is currently selling to select those properties the agent wishes to advertise. A business advertiser 322 can also access the web site 312 to order advertisements as well as to provide content for any ordered advertisements. The purchased ads are stored 350 at the web-site 312 and replicated, or distributed, to appropriate TV facilities 334 where the ads are converted to broadcast video and delivered to viewer households 344. A flowchart depicting one process for ordering ads using the system of FIG. 3A is illustrated in FIG. 4 and may assist with understanding the following discussion of each feature of FIG. 3A.

To continue with the details about the real-estate advertising example, MLS data 324-326 from regional processors or regional Boards of Realtors; other data 328, such as school, crime or other demographics; and digital photographs 330 and 332 of properties; are transferred in-bulk to the central web-site 312. (Step 402 in the flowchart of FIG. 4). These three sources of data are representative examples of existing outside data sources which can be used to provide content for advertisements which are ordered.

A real-estate agent 320 who wishes to purchase an advertisement, first accesses the web-site 312 using a typical web browser. Preferably, a user authorization and authentication procedure is used to limit access to those agents

who have previously registered with the advertising system or have satisfied some other criteria. An option is, therefore, presented to enroll those agents who access the web site 312 but who do not yet have access to the advertisement ordering system.

5           Based on the identification parameters provided during login to the system, a list of current properties associated with an agent are retrieved from the data store 350 and presented to the agent. (Step 404). If a broker accesses the system, then the broker can also be presented with a list of all properties listed by the agents who work for that broker. Preferably, ordering an advertisement is  
10       accomplished by clicking on a property in the list or by clicking on an appropriate “buy” or “order” icon near the desired list entry. (Step 406). A real-estate agent (not shown) who is unable to order an ad over the network 308 can still contact the web-site 312 via facsimile or other traditional methods to order property advertisements. However, in this instance, an operator or other personnel at the  
15       web-site 312 inputs the order into the system.

Once all ordering is completed, the web-site 312 prompts the agent 320 for credit-card information or other payment information. Depending on the terms of the agreement, the web-site 312 can immediately bill the agent 320 or defer billing until a later time-based or event-based trigger occurs. (Step 408).

20           A business 322 can similarly utilize the ordering system to order an advertisement that will concurrently be displayed with property ads. (Step 412). Similar to a real-estate agent, a business can order ads via the web, fax, telephone, etc. Instead of MLS data and digital photographs of a property, a business ad might consist of a digitized company logo, a digital picture of the owner or the  
25       establishment, or textual data which the business provides or which the web-site 312 generates. Payment arrangements and authorizations can also be handled online for businesses who order advertisements.

During the ad ordering process which might consist of HTML forms, menus of options, and other data entry screens, a destination for each ad is

specified. For real-estate ads, the location of the property being advertised can be used to automatically determine the appropriate TV insertion point to send the ad to. For business ads, the location of the business might be used to automatically specify the destination. Alternatively, a person placing an ad may also be given  
5 the opportunity to explicitly select a destination for the ad.

Once all the advertisements destined for a particular TV insertion point are collected (step 414), a schedule for that "channel" can be compiled at the web site 312. While ordering an ad, the orderer may be given options which affect the schedule such as the option to increase the frequency that an ad is run or to  
10 increase the duration of the ad relative to other ads; preferably, however, the web site 312 either manually or automatically controls the creation of the schedule which will determine when and how ads are displayed. (Step 416).

FIG. 5 illustrates one exemplary schedule generation screen 500 that allows personnel at the web-site 312 to manually generate a schedule. This screen  
15 500 provides an intuitive, graphical method for organizing the disjointed, ordered advertisements into a sequence of programs for various display ports. In a window-based operating system, another window, or windows, (not shown) may display lists or directories of content available to be scheduled. This content is then dragged or otherwise inserted into the schedule generation screen 500 in  
20 order to create a schedule.

The exemplary screen 500 includes a left-most column 502 displaying a time-line. The remaining columns 504-510 correspond to different display ports. In particular, ports A and B are linked together and are associated with real-estate ads. Port C is associated with business ads and Port E is associated with a ticker-tape display of messages. One possible use of the ticker-tape display would be to  
25 announce the upcoming schedule to a viewer or to otherwise provide system related information.

Although truncated in the figure, three different real-estate ad programs are shown scheduled for ports A and B. At 12:00, properties located in Oakland

will be displayed, at 12:05 properties located in Livingston will be displayed, and at 12:10 Wayne County properties are scheduled for display. Independent of these real-estate programs, business ads are scheduled on Port C from 12:00 through 12:10.

5       The screen 500 also includes setting for display options which vary the specific way data is presented on the screen. Only a single, example schedule generation screen 500 has been illustrated. Other screens, for displaying and generating schedule information may include horizontal time-lines or drill-down screens which provide greater and greater levels of detail regarding the schedule.

10       Once a schedule has been generated, the ads and associated scheduling information can be distributed over the network 302 to the appropriate TV insertion point, for example the cable TV head-end 334, and stored at the workstation 336. (Step 418). As discussed earlier, the advertising data transmitted to the head-end 334 includes primitive graphic elements which, at the  
15 head-end 334, are assembled into a broadcast show. (Step 420). The software application stored and operating at the workstation 334 uses the scheduling information to determine which primitive graphic elements to retrieve for each port in order to generate a display screen which can then be converted to video data formatted (step 422) for broadcast over a cable TV channel. (Step 424).

20       A screen capture of one example broadcast is depicted in FIG. 6. This example illustrates a still image of what may be broadcast to a TV viewer's household 344. In one port 602, a photograph of the property is displayed; in another port 604, agent information is displayed. Specific information regarding the property is provided in port 606. Auxiliary data such as a business ad is  
25 displayed at a port 608 near the bottom of the screen and a counter meter, informing a viewer how many properties remain in the current program, is provided in another port 610. Some of these ports, such as 602 and 606 are synchronized for obvious reasons; however, other ports are independent of each other and vary according to separate program schedules.

In one embodiment, a plurality of tabs 612-618 are provided across the top of the screen as an indication of what programs are coming up and when they are scheduled to begin. In an interactive TV and web embodiment discussed later, these tabs can be used by a viewer to "jump" to the broadcast content associated with a particular tab.

Listing changes within the MLS data as well as additional or replacement digital photographs are added to the web-site storage 350 on a regular basis. These updates can be provided as they occur or at regularly scheduled intervals. The web-site 312 also allows the real estate agents 312 and business advertisers 322 to view and revise advertisements. An agent 320 can access the web-site 312 via a web browser and request to view the advertisements which that agent has ordered. (Step 426). Changes and updates due to expired, sold or withdrawn listings as well as due to other reasons, can be entered by the agent 320 and stored at the web-site 312. Businesses 322 can also view (step 428) and modify their ads to reflect limited-time offers, sales, or changed market conditions. (Step 430). Similar to the ordering of advertisements, the updating of advertisements may also be accomplished via other media such as by telephone or fax. The ability to review advertisements provides agents with the additional capability to print ads to produce marketing information for their properties. In this way, agents can use the advertisement ordering system to download photographs and other information related to the properties in order to create visually pleasing, up-to-date material.

Periodically, the data 350 at the web-site 312 which is destined for the insertion point 334 is synchronized with the data already stored at the workstation 336. Preferably, this synchronization is performed multiple times throughout the day. In this way, updates to the ads and scheduling information are quickly made available at the insertion point 334. Accordingly, each time the workstation 336 generates a "show" for broadcasting, the latest information is broadcast into a subscriber household 344.



Also depicted in FIG. 3A are viewers 314-318. The content which is distributed to broadcast TV viewers (not shown) and cable TV subscriber households 342 and 344 can also be sent directly to individuals which have high-speed Internet connections, set-top boxes or Interactive televisions. These  
5 viewers can access the web-site 312 and request custom shows according to particular criteria they specify to the site 312.

A flowchart depicting exemplary steps for generating a custom show is illustrated in FIG. 3B. A viewer 314 first submits a request for a show, in step 352, to the web-site 312 which, in step 354, then prompts the viewer 314 for  
10 criteria by which to determine what content to include in the show. The viewer 314 can explicitly provide the criteria or can activate a previously defined show profile. Once the web-site 312 receives the criteria, in step 356, it then selects, in step 358, the primitive graphic elements from the database which match the specified criteria and generates an associated schedule for controlling their  
15 display. Similar to previous scheduling generation, the duration and sequence of each display element is determined. In step 360, all the data relating to the requested show is transmitted to the viewer's location. At the viewer's location, a client process at a computer or set-top box receives and assembles the show, in step 362, and, in step 364, displays the show to the viewer 314. The display of  
20 the show can begin after enough of the show is buffered to ensure a smoothly displayed show or the display can be delayed until all the content is received.

Until this point in the description of the present invention, the web-site 312 has been depicted as a single, computer-based system that provides a number of different functions. FIG. 7, however, illustrates one particular architecture for  
25 the web-site that distributes the different functions across a number of distinct servers 702-712. By using the illustrated architecture, the system is easily scalable to accommodate growth and expansion. These servers can be distributed across different hardware platforms or reside on a single platform.

One possible method of coordinating the activities of these different servers is by using group-ware, such as Lotus Notes, to create a cooperative environment for storing data, sharing data, replicating data, managing the system, and coordinating the efforts of the servers. A homogeneous group-ware  
5 environment, such as Lotus Notes, is only one possible arrangement to accomplish the functions of the present invention. A more open environment using separate database managers, web servers, object messaging middleware and transaction servers could also be used but might require additional effort to ensure that all components are compatible.

10 In the figure, a utility server 702 provides smooth and reliable porting of data from outside data sources, such as MLS services 714, into the system 700. A business application server 704 manages the functions relating to order placements, invoicing, payment collection, pricing and arranging for digital photographs. Another server, the management server 706, provides internal  
15 system functions such as audit trails, error logs and analysis, and system configuration. The broadcasting server 708 provides the mechanisms to direct advertising and scheduling data to the correct destinations 720 for further processing. A database server 710 manages the storage of all data used by the other system servers. A web server 712 provides the normal communications  
20 gateway for the system 700. Devices such as computers 724, set-top boxes 726, interactive television 728 and wireless devices 730 are able to communicate with the system 700 via the web-server 712. Initial inquiries, orders and revisions start with an outside party 722 accessing the web server 712. This server 712 then channels the incoming requests in the direction of the appropriate server 702-710.  
25 The web server 712 also provides a web-based show to users 724-730 who access the system to review their ads or who are using set-top boxes, interactive TV, or high-speed Internet connections.

The architecture of the present invention also simplifies the acquisition of digital photographs. One example would be the acquisition of photographs that

are associated with listed real-estate properties. Digital photographs of cars, antiques, memorabilia and auction items can also be acquired according to certain embodiments of the present invention. The flowchart of FIG. 8 depicts a preferred process for acquiring these photos.

5           In step 802, MLS listing data or data that identifies objects to be photographed are initially imported into the advertisement ordering system. Next, in step 804, a photography assignment schedule is generated which identifies items that require digital photographs and is transferred to field members of a photographer corps. This transfer can be accomplished using either a push model  
10   or a pull model. Based on the property location, a photography assignment can be pushed to the most convenient photographer; or an assignment pool can be provided on a web-site so that photographers are able to pull assignments as desired.

          Photographers in the field then acquire the digital photographs, in step  
15   806, and store them on a local computer. In step 808, after ensuring adequate quality of the photos, the photographer uploads the locally stored photographs to the advertisement ordering system. In one embodiment of the present invention, the field photographer attaches, or links, each digital photograph with the photography assignment previously acquired. Preferably this linking is done  
20   visually using drag-and-drop features of a GUI. The assignment is then returned, or uploaded, with the attached photograph and the advertisement ordering system can track the completion of the assignment. In addition, because the photograph is already associated with its assignment, no manual step is needed at the advertisement ordering system to match the photograph with its appropriate data.  
25   In this manner, photographs are automatically tracked and associated with their related data, through the photography assignment, and, therefore, manual data entry errors are minimized.

After also reviewing the quality of the uploaded photographs, the photos are stored, in step 810, at the advertisement ordering system for inclusion in advertisements as needed.

5 In addition to the data imported in step 802 being used to identify photography assignments, a person placing an order for an advertisement can also request, in step 812, that a digital photograph be scheduled. After this request, that provides enough information to properly generate a photography assignment, is received, the process continues with step 804 as described above.

10 While the previous discussion and examples have typically included a broadcast or cable TV viewing household as the destination for the advertisements and other data which were ordered, other delivery options are also possible. In the previous discussion of FIG. 3A and 3B, the possible transmission of a show to an Internet or interactive TV viewer was introduced. As discussed, the application which had previously been described as running on  
15 the workstation at the TV program insertion point can also produce a computer-generated show for delivery over a data communications network such as the Internet. By locating the show generating application in a client process, for example, at a viewer's local computer, the viewer can access the web-site 312 over a high-speed network or Internet connection, receive primitive graphic  
20 elements and scheduling information, and then locally store that data and generate and view a show.

One benefit from this arrangement is that the viewer can request or specify content according to a variety of criteria and thereby order a custom show suited specifically for them. A viewer could specify that only properties in a certain  
25 price range and with a particular number of bedrooms are of interest. The viewer can also express an interest in a range of locations which otherwise would have been delivered to different insertion points (and therefore unavailable over a single TV channel.) As has been discussed, these specifications are received by the web-site 312 and matching properties are determined. The content distributor

system of the web-site then collects the data associated with these properties and generates a custom show which is transmitted to the viewer over the Internet.

At the viewer's local computer, the client process, such as a stand-alone application or a downloaded Java applet that may have accompanied the show  
5 data, assembles and generates the custom show for display to the viewer. To improve the ease of use, search profiles can be created so that a viewer does not have to explicitly specify content criteria each time a custom show is requested.

The present invention also takes advantage of emerging digital set-top box technology which provides interactive television. Using this technology,  
10 customized shows can not only be ordered for Internet delivery, as just described, but can also be ordered for delivery to a television for local assembly and display.

Although the present invention has been described and illustrated in detail, it is clearly understood that the same is by way of illustration and example only and is not to be taken by way of limitation, the spirit and scope of the present  
15 invention being limited by the terms of the appended claims and their equivalents.

## What is Claimed Is:

- 1 1. A method for distributing TV content over a network comprising the steps of:  
2 receiving data at a first location from a remote contributor via a first network  
3 connection;  
4 transmitting at least a portion of the received data from the first location to a TV  
5 insertion point via a second network connection; and  
6 at the TV insertion point, assembling the transmitted data into video format for  
7 broadcasting over a TV channel.
- 1 2. The method as recited in claim 1, wherein the TV insertion point comprises one of a  
2 plurality of geographically distributed cable TV head-ends.
- 1 3. The method as recited in claim 1, wherein the TV insertion point comprises one of a  
2 plurality of geographically distributed TV broadcast stations.
- 1 4. The method as recited in claim 1, further comprising the steps of:  
2 obtaining a request to select identified data; and  
3 transmitting the identified data in response to the request to the TV insertion  
4 point.
- 1 5. The method as recited in claim 1, wherein the step of transmitting comprises the steps  
2 of:  
3 identifying a geographical location associated with the remote contributor; and  
4 determining the TV insertion point based on the identified geographical location.
- 1 6. The method as recited in claim 1, wherein the step of transmitting comprises the steps  
2 of:  
3 identifying a broadcast location selection of the remote contributor; and

4           determining the TV insertion point based on the broadcast location selection.

1    7. The method as recited in claim 1, wherein the step of transmitting comprises the steps  
2    of:

3           determining if the portion of the received data has previously been transmitted to  
4    the TV insertion point, and

5           transmitting the portion of the received data only if it is determined that the  
6    portion has not been previously transmitted.

1    8. The method as recited in claim 1, wherein the step of assembling includes the steps of:

2           storing the transmitted portion of the received data; and

3           generating an on-the-fly video sequence from the stored data.

1    9. The method as recited in claim 1, wherein the received data comprises at least one of:

2           a plurality of primitive graphic elements;

3           information from third-party databases; and

4           a plurality of scheduling information.

1    10. The method as recited in claim 9, wherein the data transmitted in the transmitting  
2    step comprises at least one of:

3           the plurality of primitive graphic elements; and

4           the plurality of scheduling information.

1    11. The method as recited in claim 10, wherein the step of assembling comprises the  
2    steps of:

3           storing the transmitted plurality of primitive graphic elements;

4           storing the transmitted scheduling information;

5           determining an ordered sequence for the stored primitive graphic elements; and

6           creating in real-time a video stream according to the ordered sequence.

1 12. The method as recited in claim 11, wherein the step of creating in real-time a video  
2 stream comprises the steps of:  
3       generating computer graphics data on-the-fly corresponding to the stored  
4 primitive graphic elements; and  
5       converting the generated computer graphics data to video format.

1 13. A system for distributing TV content over a network comprising:  
2       an network-based communications interface;  
3       a data storage device for storing data received at the network-based  
4 communications interface;  
5       a controller for determining a TV insertion point destination for the received data;  
6       a broadcasting server for distributing the received data to the destination via the  
7 network-based communications interface; and  
8       a processor at the destination for assembling the distributed data into video format  
9 for broadcasting over a TV channel.

1 14. The system as recited in claim 13, wherein the data received at the network-based  
2 communications interface comprises:  
3       at least one of:  
4           scheduling information;  
5           an origin of the data received; and  
6           a selection of a broadcast location.

1 15. The system as recited in claim 13, wherein the network-based communications  
2 interface is an Internet-based communications interface.

1 16. The system as recited in claim 14, wherein the destination is based on at least one of  
2 the origin of the data received and the selection of the broadcast location.

1 17. The system as recited in claim 13, wherein the processor comprises:  
2       a computer graphics to video converter.



- 1 18. The system as recited in claim 13, further comprising:  
2 a graphical data generator for locally generating data, and  
3 wherein the broadcasting server distributes the locally generated data to the destination  
4 via the network-based communications interface.
- 1 19. A computer readable medium bearing instructions for distributing TV content over a  
2 network, said instructions being arranged to cause one or more processors upon execution  
3 thereof to perform the steps of:  
4 receiving data from a remote contributor over a first network connection;  
5 transmitting a portion of the received data to a TV insertion point over a second  
6 network connection; and  
7 at the TV insertion point, assembling the transmitted portion of the received data  
8 into video format for broadcasting over a TV channel.
- 1 20. A method for selling local TV advertisements comprising the steps:  
2 receiving a purchase order at a first location for an advertisement from a  
3 customer;  
4 identifying data associated with the purchase order; and  
5 transmitting the identified data to a TV insertion point at a second location via a  
6 network-based communications link.
- 1 21. The method as recited in claim 20, wherein the purchase order is received via one of  
2 facsimile, voice telephone call, modem telephone call, Internet-based communications  
3 protocol, and mail.
- 1 22. The method as recited in claim 20, wherein the purchase order comprises the  
2 associated data.
- 1 23. The method as recited in claim 20, further comprising the step of:  
2 assembling the advertisement from the identified data.

- 1 24. The method as recited in claim 20, wherein the identified data comprises at least one  
2 of:  
3 a plurality of primitive graphic elements; and  
4 a scheduled time for the advertisement.
- 1 25. The method as recited in claim 20, further comprising the steps of:  
2 updating the identified data in response to an update request from the customer;  
3 and  
4 transmitting the updated data to the TV insertion point via the network-based  
5 communications link.
- 1 26. The method as recited in claim 25, wherein the updated data replaces only a portion  
2 of the identified data.
- 1 27. The method as recited in claim 20, further comprising the steps:  
2 generating an invoice related to the order; and  
3 accepting payment corresponding to the invoice.
- 1 28. The method as recited in claim 27, further comprising the step of:  
2 transmitting the invoice over the network-based communications link.
- 1 29. The method as recited in claim 27, wherein the payment comprises at least one of:  
2 payment corresponding to the invoice; and  
3 authorization to collect payment corresponding to the invoice.
- 1 30. A computer-based system for selling TV advertisements, comprising:  
2 a network-based communications interface;  
3 an ordering server configured to process a first order for an advertisement  
4 received at the network-based communications interface;

5           a content server configured to identify data corresponding to the processed order;  
6    and  
7           a broadcasting server configured to transmit the determined data to a TV insertion  
8    point using the network-based communications interface.

1    31. The system as recited in claim 30, wherein the ordering server is further configured  
2    to process a second order for an advertisement received by one of facsimile, voice  
3    telephone call, modem telephone call, Internet-based communications protocol, and mail.

1    32. The system as recited in claim 30, wherein the ordering server is further configured  
2    to process advertising data associated with the order, received at the network-based  
3    communications interface.

1    33. The system as recited in claim 30, wherein the identified data comprises:  
2           primitive graphic elements; and  
3           scheduling information.

1    34. The system as recited in claim 30, wherein the system further comprises:  
2           a billing server configured to generate an invoice associated with the order.

1    35. The system as recited in claim 34, wherein the billing server is further configured to:  
2           transmit the invoice via the network-based communications interface, and accept  
3    payment or payment authorization related to the invoice.

1    36. A computer readable medium bearing instructions for selling local TV  
2    advertisements, said instructions being arranged to cause one or more processors upon  
3    execution thereof to perform the steps of:  
4           receiving an order for an advertisement;  
5           determining data associated with the order; and  
6           transmitting the determined data to a TV insertion point using a network-based  
7    communications link.

- 1 37. A method for advertising real-estate over TV comprising the steps:  
2 storing at a first location data received from a database at a second location;  
3 receiving an order to advertise a property;  
4 identifying first data associated with the order, in the stored data;  
5 identifying second data associated with the order, if any, external to the stored  
6 data;  
7 assembling an advertisement related to the received order from the first and  
8 second data;  
9 transmitting the advertisement to a TV insertion point via a network-based  
10 communications link;  
11 at the TV insertion point, converting the advertisement to video format for  
12 broadcasting on a TV channel.
- 1 38. The method as recited in claim 37, wherein the database at the second location  
2 comprises demographic information related to the property.
- 1 39. The method as recited in claim 37, wherein the database at the second location  
2 comprises property listing data.
- 1 40. The method as recited in claim 37, wherein the order comprises additional data  
2 which is different from, or not included in, the stored property listing data.
- 1 41. The method as recited in claim 37, wherein the second data comprises scheduling  
2 information related to the order.
- 1 42. The method as recited in 37, wherein the step of transmitting the advertisement  
2 comprises the step of:  
3 determining an appropriate TV insertion point based on the geographical location  
4 of the property.

- 1 43. The method as recited in claim 37, further comprising the steps:  
2 transmitting auxiliary data to the TV insertion point using the network-based  
3 communications link;  
4 at the TV insertion point, converting the auxiliary data to video format for  
5 broadcasting on a TV channel; and  
6 combining the advertisement and the auxiliary video formatted data for  
7 simultaneous broadcasting on a same TV channel.
- 1 44. The method as recited in claim 37, further comprising the steps:  
2 receiving a request to review the advertisement from a real-estate professional;  
3 and  
4 transmitting the advertisement to the real-estate professional over the network-  
5 based communications link.
- 1 45. The method as recited in claim 37, further comprising the steps:  
2 receiving, from a real-estate professional, a request to view properties in the  
3 stored data; and  
4 transmitting to the real-estate professional, data related to the properties in the  
5 stored data which are associated with the real-estate professional.
- 1 46. A computer readable medium bearing instructions for advertising real-estate over  
2 TV, said instructions being arranged to cause one or more processors upon execution  
3 thereof to perform the steps of:  
4 storing at a first location property listing data received from a database at a second  
5 location;  
6 receiving an order to advertise a property;  
7 identifying first data associated with the order, in the stored data;  
8 identifying second data associated with the order, external to the stored data;  
9 assembling an advertisement related to the received order from the first and  
10 second data;

11           transmitting the advertisement to a TV insertion point using a network-based  
12   communications link;  
13           at the TV insertion point, converting the advertisement to video format for  
14   broadcasting on a TV channel.

1   47. A method for generating video content at a TV insertion point comprising the steps:  
2           receiving a plurality of primitive graphic elements via a network-based  
3   communications link;  
4           receiving scheduling information related to the plurality of primitive graphic  
5   elements via the network-based communications link;  
6           storing the received plurality of primitive graphic elements;  
7           determining an ordered sequence for the stored primitive graphic elements based  
8   on the received scheduling information; and  
9           assembling in real-time a video stream according to the ordered sequence, for  
10   broadcast over a TV channel.

1   48. The method as recited in claim 45, wherein the step of assembling in real-time a  
2   video stream comprises the steps of:  
3           generating computer graphics data on-the-fly corresponding to the stored  
4   primitive graphic elements; and  
5           converting the generated computer graphics data to video format.

1   49. The method as recited in claim 48, wherein the step of assembling in real-time a  
2   video stream comprises the steps of:  
3           generating a first video sequence;  
4           generating a second video sequence, independent of the first video sequence; and  
5           combining the first and second video sequence for simultaneous display within  
6   the video stream.

1   50. The method as recited in claim 49,  
2           wherein the step of generating a first video sequence includes the steps of:

3 identifying a first subset of the stored primitive graphic elements and a  
4 first subset of the related scheduling information for a first display port;  
5 determining a first ordered list of the first subset of the stored primitive  
6 graphic elements according to the first subset of related scheduling information; and  
7 assembling in real-time a first video sequence according to the first  
8 ordered list;  
9 and  
10 wherein the step of generating a second video sequence includes the steps of:  
11 determining a second subset of the stored primitive graphic elements and a  
12 second subset of the related scheduling information for a second display port;  
13 determining a second ordered list of the second subset of the stored  
14 primitive graphic elements according to the second subset of related scheduling  
15 information; and  
16 assembling in real-time a second video sequence according to the second  
17 ordered list.

1 51. A computer readable medium bearing instructions for generating video content at a  
2 TV insertion point, said instructions being arranged to cause one or more processors upon  
3 execution thereof to perform the steps of:  
4 receiving a plurality of primitive graphic elements over a network-based  
5 communications link;  
6 receiving scheduling information related to the plurality of primitive graphic  
7 elements over the network-based communications link;  
8 storing the received plurality of primitive graphic elements;  
9 determining an ordered sequence for the stored primitive graphic elements,  
10 wherein the determination is based on the received scheduling information; and  
11 assembling in real-time a video stream according to the ordered sequence, for  
12 broadcast over a TV channel.

1 52. A method for gathering digital photographs comprising the steps:  
2 storing at a first location data related to an object;

3           determining if a digital photograph of the object is available;  
4           if a digital photograph is not available, then transmitting, via a network-based  
5   communications link, a work-order requesting a digital photograph of the object;  
6           receiving a digital photograph of the object via the network-based  
7   communications link; and  
8           storing the received digital photograph.

1   53. The method as recited in claim 52, wherein the object comprises real-estate property.

1   54. The method as recited in claim 53, further comprising the step of:  
2           receiving at the first location property listing data from a Multiple Listing Service  
3   (MLS) database;

1   55. The method as recited in claim 52, further comprising the step of:  
2           receiving at the first location a request relating to the object;

1   56. The method as recited in claim 55, wherein the request comprises an order to  
2   advertise the object.

1   57. The method as recited in claim 52, wherein the conditional step of transmitting a  
2   work-order comprises the step of:  
3           determining a destination for the work-order.

1   58. The method as recited in claim 52, wherein the step of storing the digital photograph  
2   comprises the step of:  
3           performing quality review of the received digital photograph.

1   59. A computer readable medium bearing instructions for gathering digital photographs,  
2   said instructions being arranged to cause one or more processors upon execution thereof  
3   to perform the steps of:  
4           storing property listing data for an object;



5           determining if a digital photograph of the object is available;  
6           if a digital photograph is not available, then transmitting, over a network-based  
7   communications link, a work-order requesting a digital photograph of the object;  
8           receiving a digital photograph of the object over the network-based  
9   communications link; and  
10          storing the received digital photograph.

1   60. For a single video display screen having a plurality of display ports, each of said  
2   ports displaying distinct graphical content in respective areas of the single video display  
3   screen, a method comprising the steps of:  
4          storing display data and associated control data for each of said plurality of  
5   display ports;  
6          generating an ordered sequence of said display data for each of said plurality of  
7   display ports based on said associated control data to form said distinct graphical content  
8   for each of said plurality of display ports;  
9          combining said ordered sequences into a synchronized, parallel sequence to  
10   generate a real-time video stream for simultaneously displaying said distinct graphical  
11   content within said single video display screen.

1   61. The method as recited in claim 60, wherein the display data comprises a plurality of  
2   primitive graphic elements.

1   62. The method as recited in claim 60, wherein the associated control data comprises at  
2   least one of scheduling information and display port geometry.

1   63. The method as recited in claim 62, further comprising the step of:  
2          determining a port size for each of said plurality of display ports based on the  
3   display port geometry.

1   64. The method as recited in claim 62, further comprising the step of:

2           determining a port screen location for each of said plurality of display ports based  
3   on the display port geometry.

1   65. A computer readable medium bearing instructions for a display method for a single  
2   video display screen having a plurality of display ports, each of said ports displaying  
3   distinct graphical content in respective areas of the single video display screen, said  
4   instructions being arranged to cause one or more processors upon execution thereof to  
5   perform the steps of:  
6           storing display data and associated control data for each of said plurality of  
7   display ports;  
8           generating an ordered sequence of said display data for each of said plurality of  
9   display ports based on said associated control data to form said distinct graphical content  
10   for each of said plurality of display ports;  
11           combining said ordered sequences into a synchronized, parallel sequence to  
12   generate a real-time video stream for simultaneously displaying said distinct graphical  
13   content within said single video display screen.

1   66. A method of providing a multimedia program comprising the steps:  
2           gathering content for the program from sources via a network; and  
3           assembling the content into a program at an insertion point.

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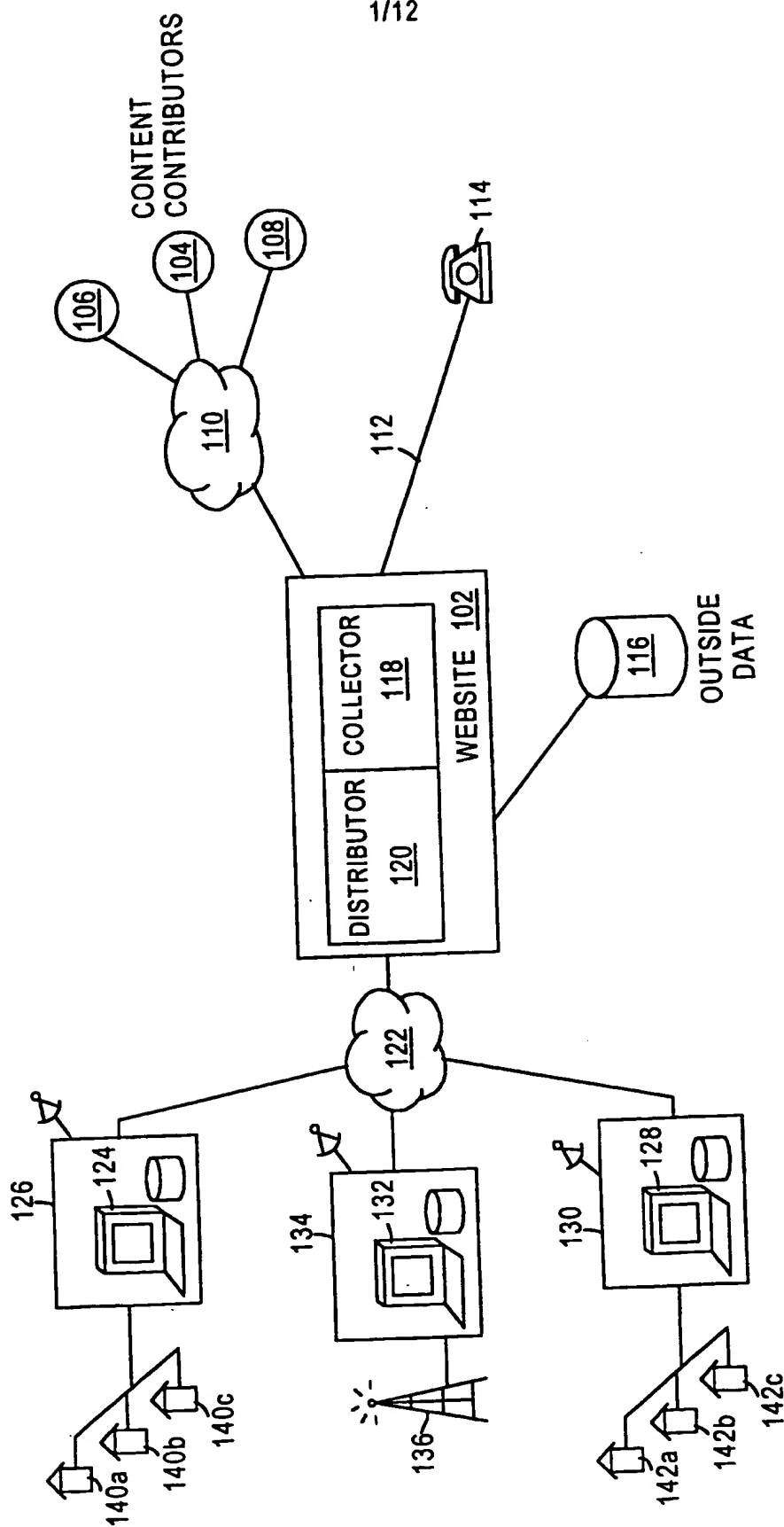


FIG. 1A

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| Advertisement       | Order             | Form   |
|---------------------|-------------------|--------|
| CITY _____          | ACRE _____        | 154    |
| PRICE _____         | PICTURE _____     | ATTACH |
| SQ FT _____         | AGENT ID _____    |        |
| BATH _____          | PROPERTY ID _____ | 152    |
| BED _____           | DATE _____        |        |
| CAR _____           | SPECIAL _____     |        |
| STARTING DATE _____ |                   |        |
| CLEAR SUBMIT        |                   |        |

FIG. 1B

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| TABLE ENTRY  |              |
|--------------|--------------|
| AD ID :      | W5755        |
| PHOTO ID :   | 080106       |
| AGENT ID :   | 88XX6        |
| START DATE : | 18 JULY 2000 |
| LOCATION :   | WAYNE        |
| BED          | 4            |
| BATH         | 3            |
| ⋮            |              |

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FIG. 1C

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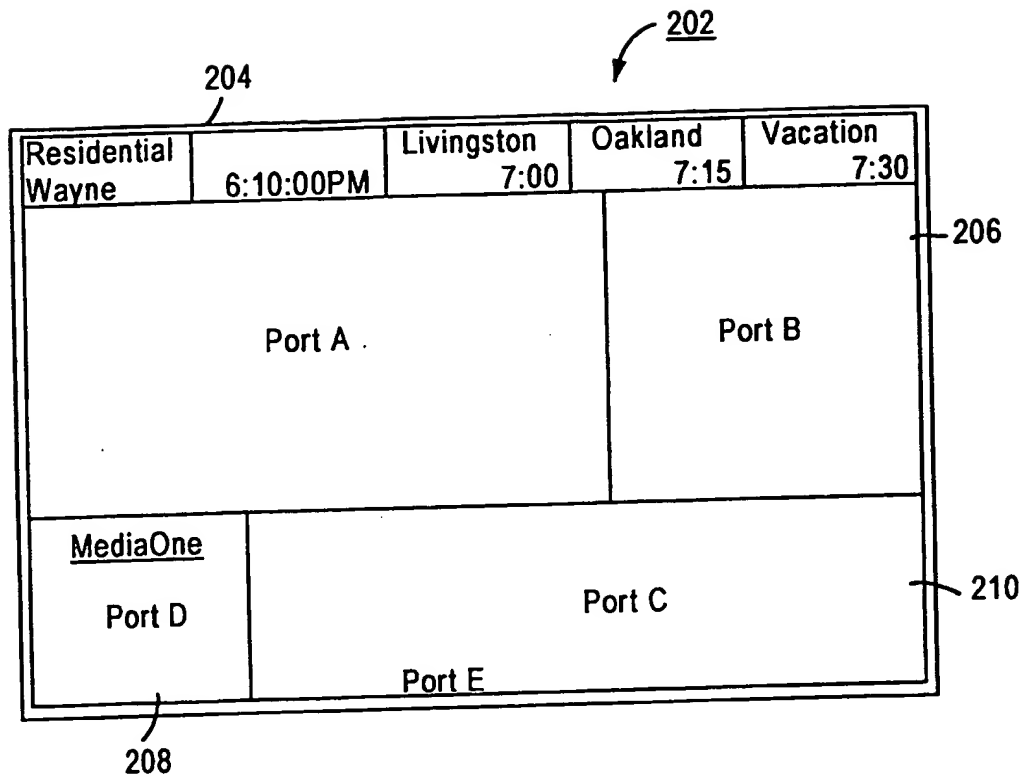


FIG. 2A

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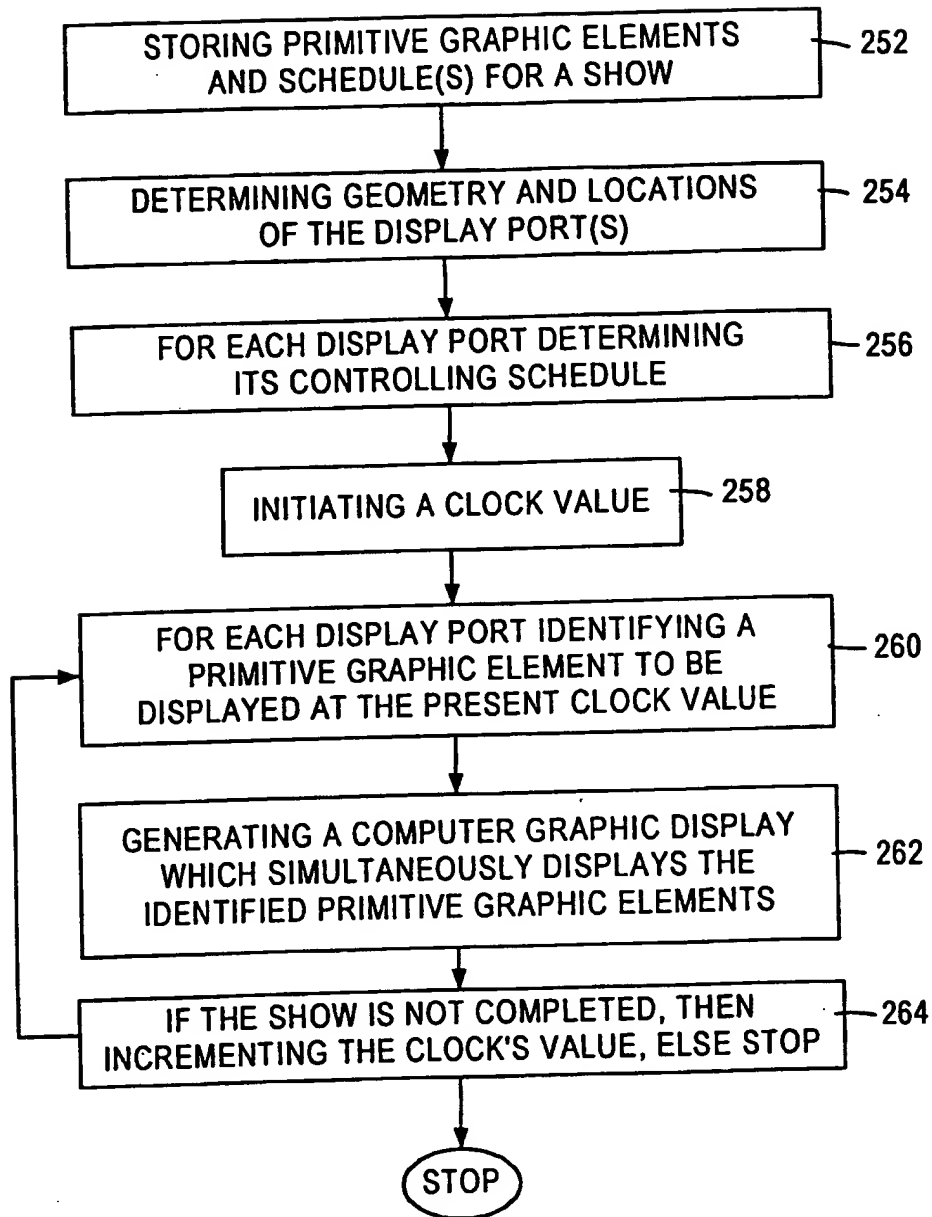


FIG. 2B

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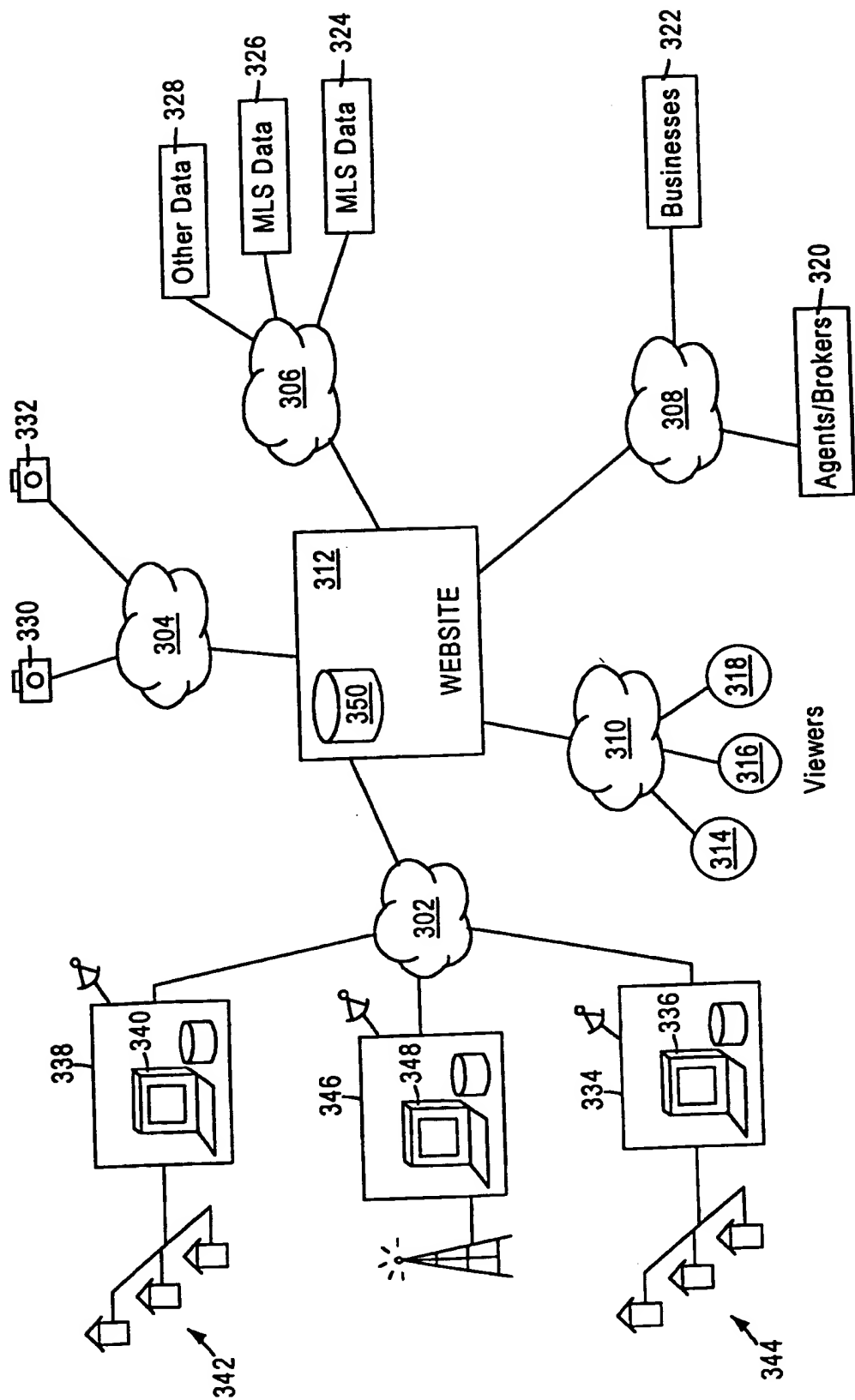


FIG. 3A



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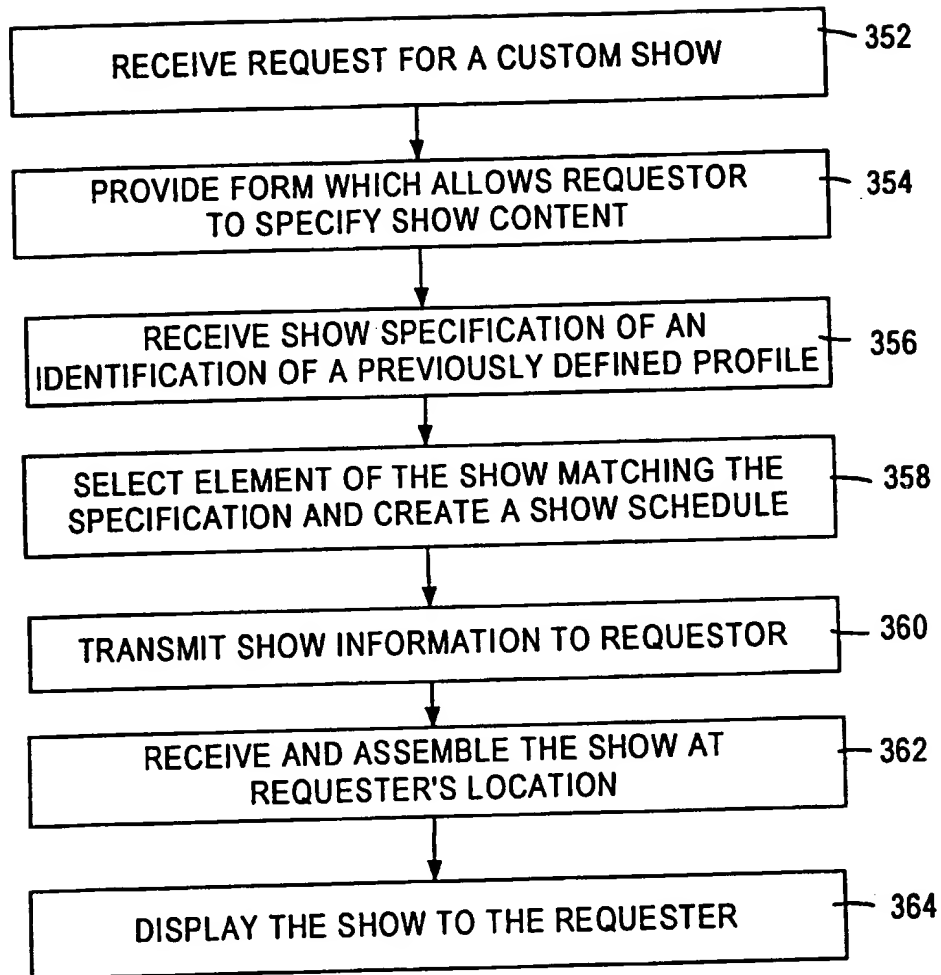


FIG. 3B

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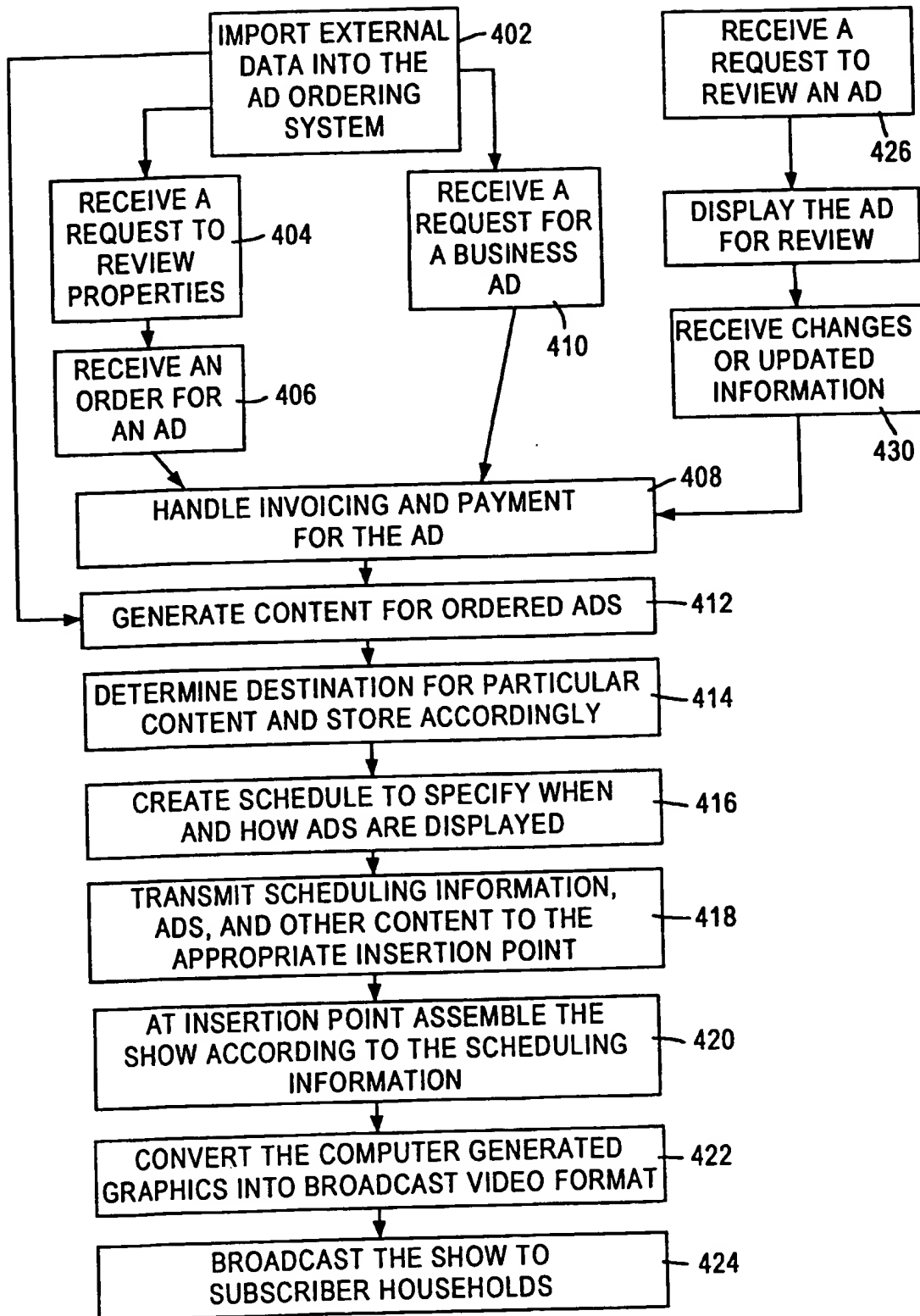


FIG. 4

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The screenshot shows the 'Schedule Programs' window in the 'Information Schedule' section. The window has a menu bar with 'File', 'Edit', and 'View'. Below the menu bar are 'OK' and 'Cancel' buttons. The main area is a table with columns: Time, Port A, Port B, Port C, Port D, Port E, and Start Time. The 'Time' column lists times from 12:00:00AM to 12:14:00AM. The 'Port A' column lists 'Sunday-Oaklan', 'Sunday-Livings', and 'Sunday-Wane'. The 'Port C' column lists 'Business Ads'. The 'Start Time' column shows '12:00 AM'. The 'Time Scaler' is set to '1' minutes. The 'Ticker Tape' is visible at the bottom. The window has a title bar 'Schedule Programs' and a status bar 'Ticker Tape'. The 'Time Scaler' is set to '1' minutes. The 'Ticker Tape' is visible at the bottom. The window has a title bar 'Schedule Programs' and a status bar 'Ticker Tape'.

| Time       | Port A         | Port B | Port C       | Port D | Port E | Start Time |
|------------|----------------|--------|--------------|--------|--------|------------|
| 12:00:00AM | Sunday-Oaklan  |        | Business Ads |        |        | 12:00 AM   |
| 12:01:00AM |                |        |              |        |        |            |
| 12:02:00AM |                |        |              |        |        |            |
| 12:03:00AM |                |        |              |        |        |            |
| 12:04:00AM |                |        |              |        |        |            |
| 12:05:00AM | Sunday-Livings |        |              |        |        |            |
| 12:06:00AM |                |        |              |        |        |            |
| 12:07:00AM |                |        |              |        |        |            |
| 12:08:00AM |                |        |              |        |        |            |
| 12:09:00AM |                |        |              |        |        |            |
| 12:10:00AM | Sunday-Wane    |        |              |        |        |            |
| 12:11:00AM |                |        |              |        |        |            |
| 12:12:00AM |                |        |              |        |        |            |
| 12:13:00AM |                |        |              |        |        |            |
| 12:14:00AM |                |        |              |        |        |            |

**FIG. 5**

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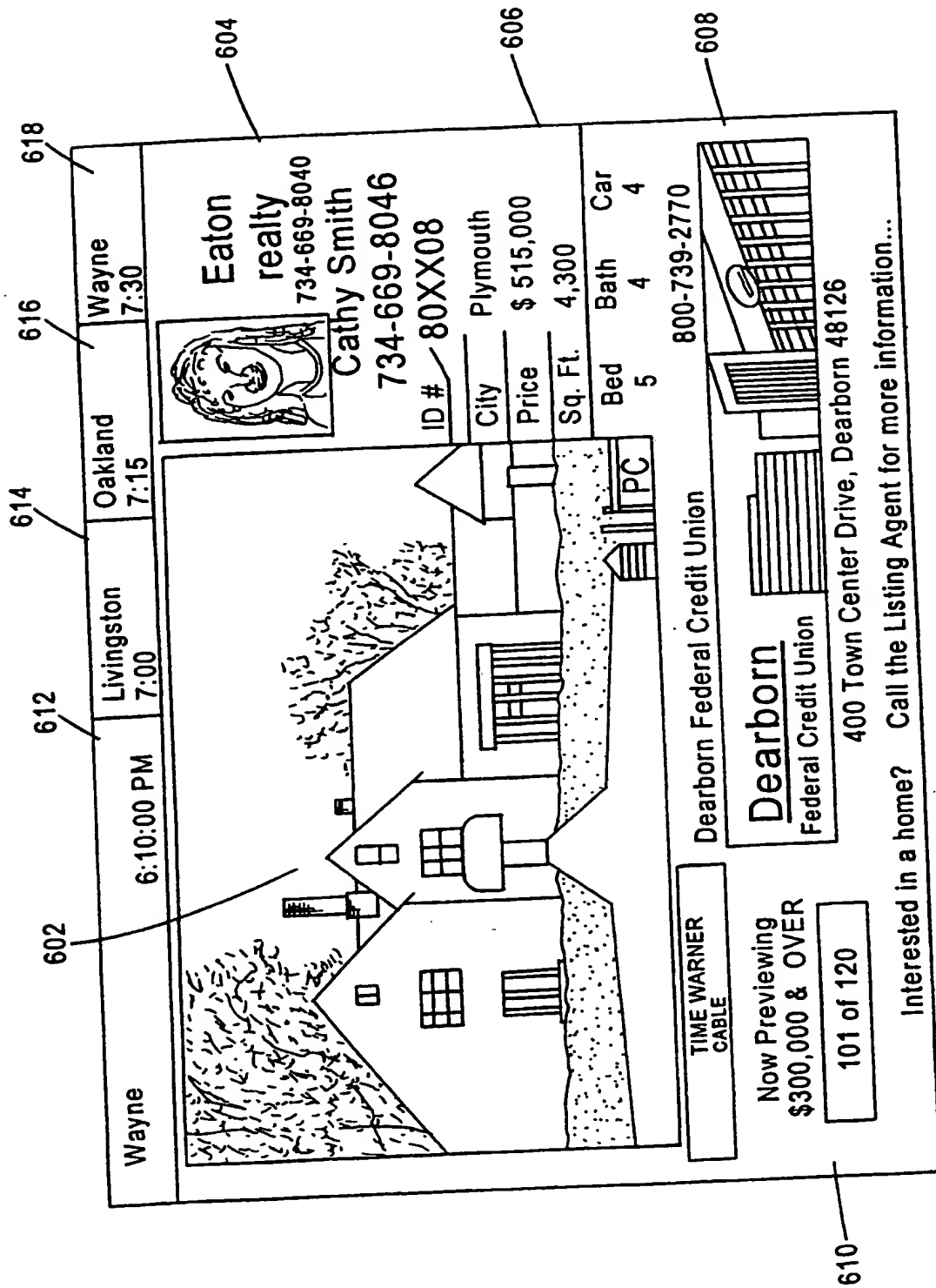


FIG. 6

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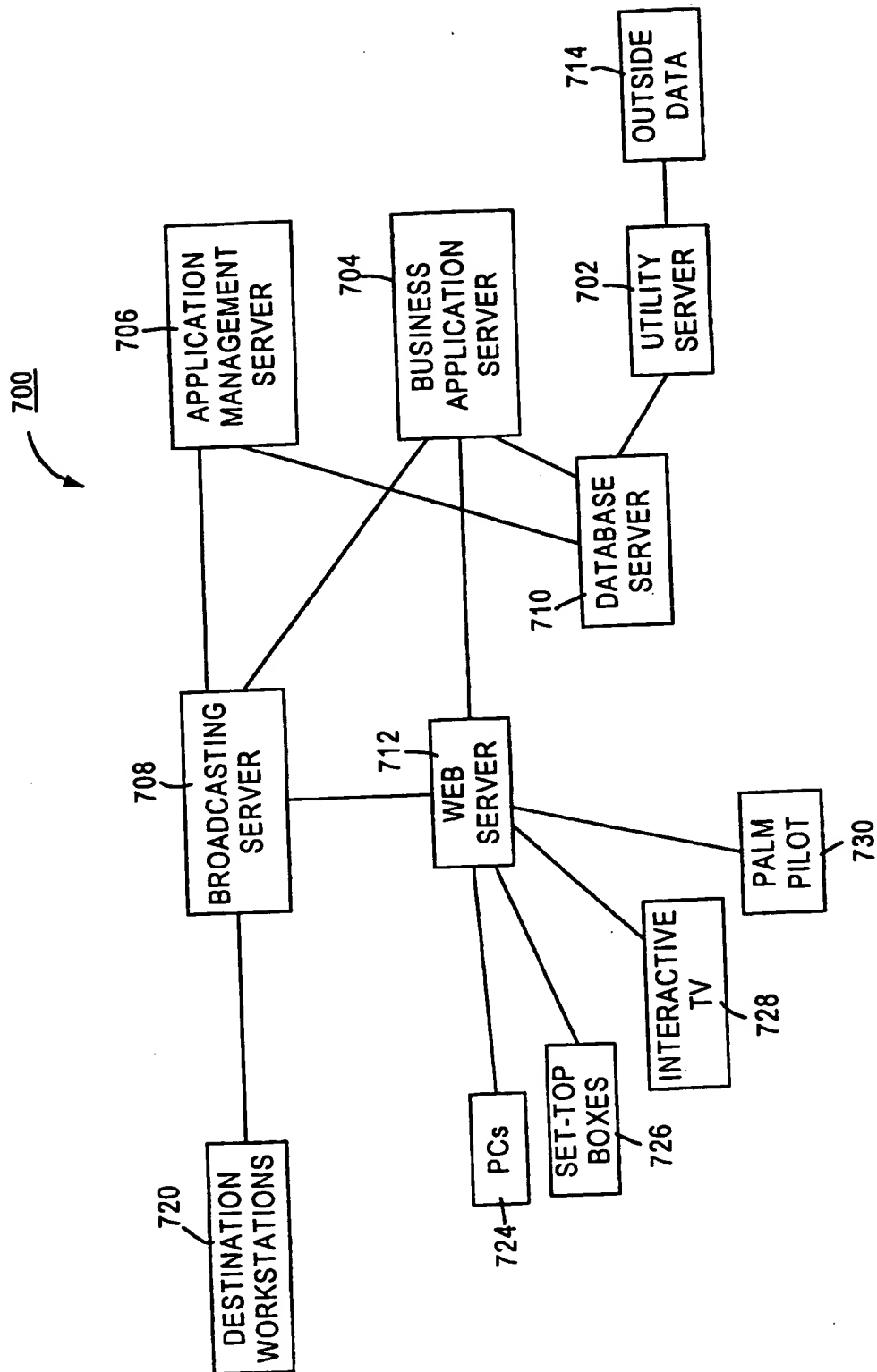


FIG. 7

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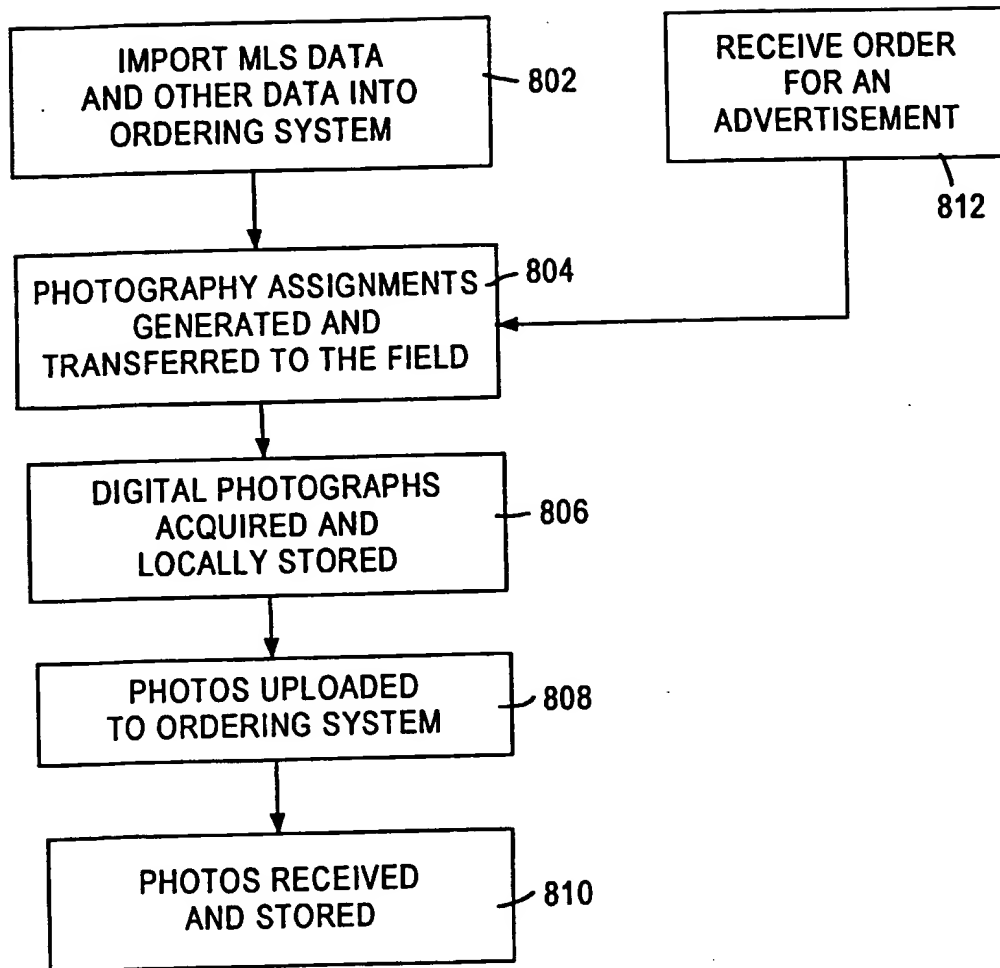


FIG. 8

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/16203

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :H04N 7/16

US CL :725/32

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 725/32; 348/1-13, 563-565; 455/2-6.3; 345/327; 705/14; H04N 7/16, 7/173

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| X         | US 5,099,319 A (ESCH et al.) 24 MARCH 1992   | 1-19,47-51,66         |
| --        | whole document   | -----                 |
| Y         |  | 20-46,52-59           |
| Y         | US 5,636,346 A (SAXE) 03 JUNE 1997   | 20-46,52-59           |
|           | columns 2-3  |                       |
| Y         | US 5,897,622 A (BLINN et al.) 27 APRIL 1999  | 21-36                 |
|           | column 15, lines 10-21   |                       |
| Y         | US 5,584,025 A (KEITHLEY et al.) 10 DECEMBER 1996                                  | 37-46, 53, 54,59      |
|           | column 1, line 45 - column 4, line 26  |                       |
| X         | US 5,848,352 A (DOUGHERTY et al.) 08 DECEMBER 1998                                 | 60-65                 |
|           | whole document   |                       |

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

|   |  |
|---|--|
| * Special categories of cited documents:  | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  |
| "A" document defining the general state of the art which is not considered to be of particular relevance  | "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone   |
| "E" earlier document published on or after the international filing date  | "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
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| "O" document referring to an oral disclosure, use, exhibition or other means  |  |
| "P" document published prior to the international filing date but later than the priority date claimed  |  |

Date of the actual completion of the international search

20 OCTOBER 2000

Date of mailing of the international search report

14 NOV 2000

 Name and mailing address of the ISA/US  
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**INTERNATIONAL SEARCH REPORT****International application No.**  
**PCT/US00/16203****C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT**

| <b>Category*</b> | <b>Citation of document, with indication, where appropriate, of the relevant passages</b> | <b>Relevant to claim No.</b> |
|------------------|---|------------------------------|
| <b>A</b>         | <b>US 4,429,385 A (CICHELLI et al.) 31 JANUARY 1984<br/>whole document</b>                | <b>37-46,53-54</b>           |